

Mark D. Decker, Ph.D.

Associate Head and Teaching Associate Professor

Department of Biology Teaching and Learning, University of Minnesota

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EDUCATION:

- Ph.D. in Conservation Biology (minor in Ecology), University of Minnesota, Minneapolis, MN
- M.S. in Biological Sciences (spec. in Ecology), Purdue University, West Lafayette, IN
- B.S. in Natural Resources (spec. in Wildlife Ecology), University of Michigan, Ann Arbor, MI

RESEARCH INTERESTS:

- Development and use of active learning and student-centered approaches in science education
- Alternative teaching methods, particularly in relation to the integration of technology
- Role of human social behavior in functioning of collaborative student teams

PROFESSIONAL EXPERIENCE:

Associate Head, Department of Biology Teaching and Learning, July 2014 - present.

Co-Director: Biology Program, University of Minnesota, August 2008 - June 2014.

Voting member, University Learning Technology Advisors, University of Minnesota, January 2017 - present.

Associate Director, Biology Program, University of Minnesota, August 2006 - August 2008.

Teaching Associate Professor: Biology Program, University of Minnesota, November 2005 - present.

Advisory Committee, Biology Society, and Environment major, College of Liberal Arts, University of Minnesota, August 2006 - present.

Biology Program Advisory Committee, University of Minnesota, August 1998 - present.

Associate Education Specialist: General Biology Program, University of Minnesota, March 2003 - March 2005.

Assistant Education Specialist: General Biology Program, University of Minnesota, August 1998 - March 2003.

State of Minnesota K-12 Science Standards Committee: Committee established by the Department of Children, Families, and Learning to determine state science standards under the Bush administration's "No Child Left Behind" program, October 2002 - March 2003.

Program supervisor: BioCourse.com (McGraw-Hill), September 2000 - December 2001.

Assistant professor (tenure-track): Division of Biology, Kansas State University, Fall 1996 - Fall 1998.

Research assistant: Department of Ecology, Evolution and Behavior, University of Minnesota, Fall 1995 - Fall 1996.

Multimedia developer and webmaster: General Biology Program, University of Minnesota, Winter 1995 - Fall 1996.

Lecturer: Evolutionary and Ecological Perspectives, General Biology Program, University of Minnesota, Winter and Summer 1994.

PEER-REVIEWED PUBLICATIONS:

- Wick, S., M. Decker, D. Matthes, R. Wright. 2013. Students propose genetic solutions to societal problems. *Science* 341:1467-1468.
- Walker, J.D., S.H. Cotner, P.M. Baepler, and M.D. Decker. 2008. A delicate balance: Integrating active learning into a large lecture course. *CBE-Life Sciences Education* 7:361–367.
- Decker, M.D. 2005. Why intelligent design isn't intelligent: Review of *Unintelligent Design*. *Cell Biology Education* 4:121-122.
- Parker, P.G., T.A. Waite and M.D. Decker. 1995. Behavioral association and kinship in communally roosting black vultures. *Animal Behaviour* 49:395-401.
- Zhu P.L., Y. Shen., X.P. Yuan, X.H. Zhao, M. Levy, M. Decker, N. Talbot, J. Manry and J. Hamer. 1995. Genetic diversity and pathotype structure of *Magnaporthe grisea* in partial rice growing areas of Southern China. *Journal of Agricultural Biotechnology* 3:64-68.
- Decker, M.D., P.G. Parker, D.J. Minchella and K.N. Rabenold. 1993. Monogamy in black vultures: genetic evidence from DNA fingerprinting. *Behavioral Ecology* 4:34-43.
- Rabenold, P.P., W.H. Piper, M.D. Decker and D.J. Minchella. 1991. Polymorphic minisatellite amplified on avian W chromosome. *Genome* 34:489-493.
- Rabenold, P.P., K.N. Rabenold, W.H. Piper, M.D. Decker, and J. Haydock. 1991. Using DNA fingerprinting to assess kinship and genetic structure in avian populations. In: *The Unity of Evolutionary Biology: Proc. IV Int. Cong. Syst. Evol. Biol.* (E.C. Dudley, ed.), pp. 611-620. Dioscorides Press, Portland, Oregon.
- Rabenold, P.P. and M.D. Decker. 1989. Black and Turkey Vultures expand their ranges northward. *Eyas* 12:11-15.

BOOKS:

- Moore, R., M. Decker, and S. Cotner. 2009. *Chronology of the Evolution-Creationism Controversy*. Greenwood Press, Westport CT.
- Moore, R. and M.D. Decker. 2008. *More than Darwin: An Encyclopedia of the People and Places of the Evolution-Creationism Controversy*. Greenwood Press, Westport CT.

OTHER PUBLICATIONS:

- Scott, C., B. Gibbens, and M. Decker. 2014-2019. *BIOL 1009 Lab Manual*. Blue Door Publishing, Minnetonka, MN
- Decker, M.D., B. Montelone, E. Horne, J. Coles, and D. Rintoul. 2001. *Principles of Biology Studio Manual, Second Edition*. EMC/Paradigm Press, St. Paul MN.

AWARDS AND GRANTS:

- National Academies Education Mentor in the Life Sciences, National Academies of Science, 2011-2014.
- Outstanding Reference Source, for *Chronology of the Evolution-Creationism Controversy* (with R. Moore and S. Cotner), American Library Association, 2011.
- National Academies Education Fellow in the Life Sciences, National Academies of Science, 2004-2005.
- Science Prize for Inquiry-Based Instruction. 2013. American Association for the Advancement of Science. With S. Wick, D. Matthes, and R. Wright.
- Improving Teacher Quality Development Program (U.S. Department of Education). 2009, 2004, 2002. Evolution, Controversy, and Standards: a two-week workshop on evolutionary biology for high school teachers.
- National Science Foundation. 1996. Application of microsatellite analysis to the study of a spatially-structured population.
- Chicago Zoological Society. 1996. Gene flow in a spatially-structured beetle population. Graduate School Special Grant, University of Minnesota (1996). Gene flow within a spatially-structured beetle population.

AWARDS AND GRANTS (continued):

- James W. Wilkie Fund for Natural History, University of Minnesota. 1994. Dynamics of spatially structured beetle populations within and among isolated prairie preserves.
- Sigma Xi Scientific Research Society. 1993. Dynamics of spatially-structured beetle populations within isolated prairie preserves.
- James W. Wilkie Fund for Natural History, University of Minnesota. 1993. Gene flow and genetic differentiation in fragmented beetle populations.
- James W. Wilkie Fund for Natural History, University of Minnesota. 1992. Genetic differentiation and gene flow in fragmented beetle populations.
- North Carolina Wildlife Resource Commission. 1989. Black vultures: population size and reproductive success, with P.P. Rabenold.
- David Ross Fellowship, Purdue University. 1989. Testing kinship theory for the evolution of sociality using DNA fingerprinting, with K.N. Rabenold.
- American Ornithologists' Union, Alexander Wetmore Memorial Awards. 1989. Kinship in feeding groups of black vultures.
- Sigma Xi Scientific Research Society. 1988. Relatedness of individuals within groups of communally roosting black vultures.
- David Ross Summer Research Grant. 1988. Purdue University.
- American Museum of Natural History, Frank M. Chapman Memorial Research Fund. 1987. Relatedness of individuals within groups of communally roosting black vultures.

PRESENTATIONS AT PROFESSIONAL MEETINGS:

- Decker, M. and B. Greenwald. The evolution of a mutually-beneficial mentoring relationship. NSTA, St. Louis, MO, November 2017.
- Decker, M., J. Todd, and R. Tritz. Active learning classrooms - enhanced education with integrated technology. Annual Conference of the Society for College and University Planning, Chicago, IL, July 2012.
- Decker, M., R. Wright, D. Wassenberg, S. Fitzgerald, J. Todd, A. Whiteside, D. Matthes, and S. Wick. The active learning classroom: leveraging architecture and technology to improve student engagement & learning. NSF/AAAS Conference on Transforming Undergraduate Biology Education, Washington DC, July 2009.
- Wright, R., M. Decker, D. Matthes, D. Wassenberg, and S. Wick. Lose the lectures, not the learning: team-based learning in introductory biology. NSF/AAAS Conference on Transforming Undergraduate Biology Education, Washington DC, July 2009.
- Matthes, D., R. Brooker, B. Couch, M. Decker, D. Wassenberg, S. Wick, and R. Wright. Transforming a foundations course in biology by engaging students as colleagues. Association of College and University Biology Educators (ACUBE), Saint Louis, MO. October 2009.
- Matthes, D., R. Brooker, B. Couch, M. Decker, D. Wassenberg, S. Wick, and R. Wright. Stepping away from the podium: transforming biology majors' introduction to the foundations of biology by engaging them as colleagues. American Society of Cell Biology Meeting, San Diego, December 2009.
- Wright, R., V. Pompei, M. Decker, D. Wassenberg, S. Wick. How to lose the lectures without losing the learning: team-based learning in introductory biology. American Society for Cell Biology Annual Meeting, San Francisco, 2008.
- Decker, M. NCBI as a resource for teaching evolution. Minnesota Science Teachers Association's Fall conference, Minneapolis, MN, September 2007.
- Decker, M. and R. Peifer. The use of technology to enhance presentations in science education: UPresent and UGather. Minnesota Science Teachers Association's Fall conference, St. Paul, MN, October 1998.
- Montelone, B. and M. Decker. The studio format for introductory college biology instruction. Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering and Technology, Kansas State University, Manhattan, KS, January 1998.

PRESENTATIONS AT PROFESSIONAL MEETINGS (continued):

- Decker, M. 1996. Using the World Wide Web in introductory biology. Association for Biology Laboratory Education Conference, Boston, MA, June 1996.
- Fall, B. and M. Decker. Integrating computer-based problem-solving with organisms. Association for Biology Laboratory Education Conference, Boston, MA, June 1996.
- Fall, B., S. Fifield and M. Decker. Evolution by artificial selection: a 9-week classroom investigation using Rapid-Cycling Brassica. CELS IV Conference. Madison, WI, June 1995.
- Fifield, S., B. Fall and M. Decker. A hands-on simulation of natural selection. CELS IV Conference. Madison, WI, June 1995.
- Fall, B., R. Peifer and M. Decker. Integrating computer-based problem solving in an introductory biology teaching laboratory. Faculty Technology Conference. St. Paul, MN, October 1995.
- Decker, M., P. Parker, D. Minchella and K. Rabenold. Monogamy in black vultures. Annual Midwestern Ecology Meetings. West Lafayette, IN, March 1993.
- Decker, M., P. Rabenold and D. Minchella. Testing monogamy in black vultures. Annual meeting of the Animal Behavior Society. Wilmington, NC, June 1991.
- Rabenold, P., K. Rabenold, W. Piper and M. Decker. The genetic structure of populations: How much can DNA fingerprinting do? Third International Conference on Behavioral Ecology. Uppsala, Sweden, August 1990.

INVITED PRESENTATIONS:

- Decker, M. Campus learning spaces: where do we go from here? Keynote address at Akademiska Hus AHA seminar, Karolinska Institute, Stockholm, Sweden, October 2018.
- Decker, M. Active learning spaces: the past, the present ... the future? Rum för lärande conference, Mälardalens högskola, Västerås, Sweden, October 2018.
- Decker, M. The one who does the work does the learning. Biotechnology and Microbiology for Teachers In the Classroom (BioTIC), Hamline University, St. Paul MN, March 5, 2016.
- Decker, M. Incorporating Active Learning into University Teaching, Symposium on the Future of Teaching Spaces, Uppsala University (Sweden), August 2014.
- Evolution and the K-12 teacher*, EngrTEAMS: Engineering to Transform the Education of Analysis, Measurement, and Science in Team-Based Targeted Mathematics-Science Partnership, 2014
- Decker, M. Scientific teaching and active learning. Michigan Technological University, Houghton MI, March 2014.
- Decker, M. If we build it: Active learning classrooms at the research university. National Forum on Active Learning Classrooms, University of Minnesota, Minneapolis MN, August 2013.
- Decker, M. Active learning in undergraduate education. Viterbo University, La Crosse WI, August 2013.
- Decker, M. SCALE-UP classrooms and active learning. University of North Dakota, Grand Forks ND, May 2013.
- Wright, R. and M. Decker. Active learning. Florida A & M Univ., Tallahassee FL, March 2013.
- Todd, J, M. Decker, and M. Hites. Active Learning Classrooms: Enhancing Education With Integrated Technology. Society for College and University Planning. September 2012.
- Wright R. and M. Decker. Teaching biology so that students learn biology. Presentation to the faculty of the medical school, University of Minnesota - Duluth, Duluth MN, March 2011.
- Decker, M. Dinosaurs, evolution, and creationism. Darwin Day program, Bell Museum of Natural History, University of Minnesota, February 2009.
- Decker, M. When science and religion clash in the mind of a student, how should the instructor respond? Symposium on education at the Society for the Study of Evolution meetings, Minneapolis, MN, June 2008.
- Decker, M. Can Darwin Make You Healthy? Café Scientifique, Bell Museum of Natural History, University of Minnesota, May 2008.

INVITED PRESENTATIONS (continued):

- Decker, M. and S. Cotner. The perspective of college-level general biology teachers on how well students are prepared when they enter college, what could be improved, and why it's important to provide K-12 exposure to evolutionary biology. K-12 Evolution 101 Workshop at the Society for the Study of Evolution meetings, Minneapolis MN, June 2008.
- Decker, M. Active learning in large enrollment classes: a practical workshop. Academy of Distinguished Teachers Conference, University of Minnesota, April 2005.
- Decker, M. The use of simulations in biology education. Improving Biology Education: Theory and Practice Symposium, Chicago, IL, November 2004.
- Decker, M. Feeding science to visitors: the role of science museums. Panel discussion, 2003 Annual Conference, Association of Science-Technology Centers, Minneapolis, MN, November 2003.
- Decker, M. Dealing with controversy: hot issues in mathematics, science and teacher preparation. Panel discussion at Transforming Teacher Education Conference, Deerwood, MN, April 2002.
- Decker, M. The application of technology in undergraduate science education. Symposium sponsored by McGraw-Hill to enhance undergraduate teaching, Irvine, CA, March 1999.
- Peifer, R. and M. Decker. The use of technology in science education. General Biology Symposium II, Snowmass, CO, June 1998.
- Decker, M. Teaching and technology in undergraduate biology education. University of Minnesota, St. Paul, MN, October 1997.
- Decker, M. Active learning in Principles of Biology. Principles of Biology dedication. Division of Biology, Kansas State University, Manhattan, KS, October 1997.
- Decker, M. Technology-enhanced learning in biology education. President's State of the University address, Kansas State University, Manhattan, KS, September 1997.
- Decker, M. Technology as a tool in science education. Presentation to the Regents, Kansas State University, Manhattan, KS, September 1997.
- Decker, M. The use of technology in undergraduate education. Department of Agronomy, Kansas State University, Manhattan, KS, August 1997.
- Decker, M. The application of molecular genetic analysis in ecology and evolutionary biology. Division of Biology, Kansas State University, Manhattan, KS, March 1996.
- Peifer, R. and M. Decker. Teaching evolutionary biology. Address to Minnesota Science Teacher's Association Conference, St. Paul, MN, 1996.
- Fall, B., R. Peifer, and M. Decker. The use of Wisconsin Fast Plants for teaching evolution. Demonstration lab for Minnesota Science Teacher's Association Conference, St. Paul, 1996.
- Decker, M. Multimedia in college classrooms. Strategies for Success Workshop. University of Louisville, Louisville, KY, November 1994.
- Decker, M. Multimedia: What is it and what can it do? Department of Agronomy, University of Minnesota, St. Paul, MN, October 1994.
- Jorn, L. and M. Decker. Multimedia in the classroom. Teaching Enrichment Workshop. University of Minnesota, Minneapolis, MN, October 1994.
- Decker, M. Multimedia in college classrooms. Strategies for Success Workshop. Oklahoma City Community College, Oklahoma City, OK, September 1994.

WORKSHOPS PRESENTED:

- Decker, M. Active learning in large-enrollment courses. NU 2018 (Nätverk och Utveckling) conference, Västerås, Sweden, October 2018.
- Risser Innovative Teaching Fellows, University of Oklahoma, January 7-9, 2015 and August 12-14, 2015: workshop and mentoring on active learning to university faculty.
- Decker, M. The one who does the work does the learning. Workshops provided to the Nordic Five Tech institutions (Norwegian University of Science and Technology; Royal Institute of Technology; Chalmers Univ. of Technology; Technical University of Denmark), March 2015
- Decker, M. The one who does the work does the learning. Swedish University of Agricultural Sciences, March 2015

WORKSHOPS PRESENTED (continued):

National Academies Northstar Institute for Undergraduate Education in Biology. HHMI-funded week-long workshop for university faculty, University of Minnesota, 2011-2016. Co-led with several colleagues.

Region 11 Math & Science Teacher Academy Partnership. Workshops sponsored by the Minnesota Department of Education, August 2011, October 2011, February 2012.

Understanding Evolution 101. Day-long workshop offered by Department of Continuing Education, University of Minnesota, March 2011.

Evolution, Standards, and Controversy Workshop (BIOL 5910), University of Minnesota, June 2000, July 2002, July 2004, June 2009. Two-week workshop preparing middle and high school teachers for teaching evolutionary biology. Co-led with various colleagues.

Gopher Multimedia Workshop, General Biology Program, University of Minnesota, Minneapolis, Minnesota, June 1998 and June 1999. One-week workshops for high school teachers in the use of multimedia in the science classroom. Co-led with R. Peifer.

Technology-enhanced teaching. Two day workshop for the Department of Biology and Microbiology, South Dakota State University, June 1995. Co-led with R. Peifer.